PCT/EP2003/008701

10/522883

SEQUENCE LISTING

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Ser Leu Glu Glu Asn Lys Ser Leu Lys Glu Gln Lys Lys Leu Asn Asp 120 125 115 Leu Cys Phe Leu Lys Arg Leu Leu Gln Glu Ile Lys Thr Cys Trp Asn 130 135 Lys Ile Leu Met Gly Thr Lys Glu His 150 145 <210> 3 <211> 531 <212> DNA <213> Artificial Sequence <220> <223> Description of Artificial Sequence: r-hIL-7 cDNA <220> <221> CDS <222> (1)..(531) <400> 3 atq ttc cat qtt tct ttt agg tat atc ttt gga ctt cct ccc ctg atc Met Phe His Val Ser Phe Arg Tyr Ile Phe Gly Leu Pro Pro Leu Ile 15 1 5 ctt gtt ctg ttg cca gta gca tca tct gat tgt gat att gaa ggt aaa 96 Leu Val Leu Leu Pro Val Ala Ser Ser Asp Cys Asp Ile Glu Gly Lys 20 25 144 gat ggc aaa caa tac gag tcc gtt ctg atg gtc agc atc gat caa tta Asp Gly Lys Gln Tyr Glu Ser Val Leu Met Val Ser Ile Asp Gln Leu ttg gac agc atg aaa gaa att ggt agc aat tgc ctg aat aat gaa ttt 192 Leu Asp Ser Met Lys Glu Ile Gly Ser Asn Cys Leu Asn Asn Glu Phe 60 50 55 aac ttt ttt aaa aga cat atc tgt gat gct aat aag gaa ggt atg ttt 240 Asn Phe Phe Lys Arg His Ile Cys Asp Ala Asn Lys Glu Gly Met Phe 70 65 tta ttc cgt gct gct cgc aag ttg agg caa ttt ctt aaa atg aat agc Leu Phe Arg Ala Ala Arg Lys Leu Arg Gln Phe Leu Lys Met Asn Ser 90 95

85

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	_	_		_						-		aaa Lys 125				384
-		-	-				_	_	_	-	-	aat Asn				432
-												aag Lys				480
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85 90 95

Thr Gly Asp Phe Asp Leu His Leu Leu Lys Val Ser Glu Gly Thr Thr 100 105 110

Ile Leu Leu Asn Cys Thr Gly Gln Val Lys Gly Arg Lys Pro Ala Ala 115 120 125

Leu Gly Glu Ala Gln Pro Thr Lys Ser Leu Glu Glu Asn Lys Ser Leu 130 135 140

Lys Glu Gln Lys Lys Leu Asn Asp Leu Cys Phe Leu Lys Arg Leu Leu 145 150 155 160

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<210> 6

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<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: Primer

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36

37

<210> 7

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105 100 110 ata ctg ttg aac tgc acc ggc aag gtt aaa gga aga aaa cca gct gcc Ile Leu Leu Asn Cys Thr Gly Lys Val Lys Gly Arg Lys Pro Ala Ala 115 ctg ggt gaa ccc caa cca aca aag agt ttg gaa gaa aat aaa tct tta 432 Leu Gly Glu Pro Gln Pro Thr Lys Ser Leu Glu Glu Asn Lys Ser Leu 130 135 140 aag gaa cag aaa aaa ctg aat gac tca tgt ttc cta aag aga cta cta 480 Lys Glu Gln Lys Lys Leu Asn Asp Ser Cys Phe Leu Lys Arg Leu Leu 145 150 155 caa aag ata aaa act tgt tgg aat aaa att ttg atg ggc act aaa gaa Gln Lys Ile Lys Thr Cys Trp Asn Lys Ile Leu Met Gly Thr Lys Glu 170 165 531 cac His <210> 13 <211> 177 <212> PRT <213> Artificial Sequence <223> Description of Artificial Sequence: PS-sIL-7 cDNA Met Phe His Val Ser Phe Arg Tyr Ile Phe Gly Leu Pro Pro Leu Ile 5 1 15 Leu Val Leu Pro Val Ala Ser Ser Asp Cys Asp Ile Glu Gly Lys 20 25 Asp Gly Lys Gln Tyr Glu Ser Val Leu Met Val Ser Ile Asp Gln Leu 35 40 45 Leu Asp Ser Met Lys Glu Ile Gly Ser Asn Cys Leu Asn Asn Glu Phe 50 55 60 Asn Phe Phe Lys Arg His Leu Cys Asp Asn Lys Glu Gly Met Phe 70 75 80 65 Leu Phe Arg Ala Ala Arg Lys Leu Arg Gln Phe Leu Lys Met Asn Ser 85 90 95 Thr Gly Asp Phe Asp Leu His Leu Leu Lys Val Ser Glu Gly Thr Thr

100 105 110

Ile Leu Leu Asn Cys Thr Gly Lys Val Lys Gly Arg Lys Pro Ala Ala 115 120 125

Leu Gly Glu Pro Gln Pro Thr Lys Ser Leu Glu Glu Asn Lys Ser Leu 130 135 140

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<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence: BclXL5'Notl
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28

<210> 15

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<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: BclXL3'BstBI
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28

<210> 16

<211> 537

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: EPOPS-r-hIL-7
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<220>

<221> CDS

<222> (1)..(537)

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Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Asp Cys Asp Ile Glu
20 25 30

ggt aaa gat ggc aaa caa tac gag tcc gtt ctg atg gtc agc atc gat 144
Gly Lys Asp Gly Lys Gln Tyr Glu Ser Val Leu Met Val Ser Ile Asp
35 40 45

caa tta ttg gac agc atg aaa gaa att ggt agc aat tgc ctg aat aat 192 Gln Leu Leu Asp Ser Met Lys Glu Ile Gly Ser Asn Cys Leu Asn Asn 50 55 4 60

gaa ttt aac ttt ttt aaa aga cat atc tgt gat gct aat aag gaa ggt 240 Glu Phe Asn Phe Phe Lys Arg His Ile Cys Asp Ala Asn Lys Glu Gly 65 70 80

atg ttt tta ttc cgt gct cgc aag ttg agg caa ttt ctt aaa atg 288 Met Phe Leu Phe Arg Ala Ala Arg Lys Leu Arg Gln Phe Leu Lys Met 85 90 95

aat agc act ggt gat ttt gat ctc cac tta tta aaa gtt tca gaa ggc 336 Asn Ser Thr Gly Asp Phe Asp Leu His Leu Leu Lys Val Ser Glu Gly 100 105 110

aca aca ata ctg ttg aac tgc act ggc cag gtt aaa gga aga aaa cca 384
Thr Thr Ile Leu Leu Asn Cys Thr Gly Gln Val Lys Gly Arg Lys Pro
115 120 125

gct gcc ctg ggt gaa gcc caa cca aca aag agt ttg gaa gaa aat aaa 432 Ala Ala Leu Gly Glu Ala Gln Pro Thr Lys Ser Leu Glu Glu Asn Lys 130 135 140

tct tta aag gaa cag aaa aaa ctg aat gac ttg tgt ttc cta aag aga 480

Ser Leu Lys Glu Gln Lys Lys Leu Asn Asp Leu Cys Phe Leu Lys Arg 155 150 145 cta tta caa gag ata aaa act tgt tgg aat aaa att ttg atg ggc act 528 Leu Leu Gln Glu Ile Lys Thr Cys Trp Asn Lys Ile Leu Met Gly Thr 175 170 165 537 aaa gaa cac Lys Glu His <210> 17 <211> 179 <212> PRT <213> Artificial Sequence <223> Description of Artificial Sequence: EPOPS-r-hIL-7 **cDNA** <400> 17 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Leu Ser Leu 10 5 1 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Asp Cys Asp Ile Glu 25 20 Gly Lys Asp Gly Lys Gln Tyr Glu Ser Val Leu Met Val Ser Ile Asp 40 35 Gln Leu Leu Asp Ser Met Lys Glu Ile Gly Ser Asn Cys Leu Asn Asn 60 55 50 Glu Phe Asn Phe Phe Lys Arg His Ile Cys Asp Ala Asn Lys Glu Gly 75 70 Met Phe Leu Phe Arg Ala Ala Arg Lys Leu Arg Gln Phe Leu Lys Met 90 85 Asn Ser Thr Gly Asp Phe Asp Leu His Leu Leu Lys Val Ser Glu Gly 105 Thr Thr Ile Leu Leu Asn Cys Thr Gly Gln Val Lys Gly Arg Lys Pro

Ser Leu Lys Glu Gln Lys Lys Leu Asn Asp Leu Cys Phe Leu Lys Arg 145 150 155 160

Ala Ala Leu Gly Glu Ala Gln Pro Thr Lys Ser Leu Glu Glu Asn Lys

125

140

120

Leu Leu Gln Glu Ile Lys Thr Cys Trp Asn Lys Ile Leu Met Gly Thr
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Lys Glu His

<210> 18 <211> 519 <212> DNA <213> Artificial Sequence <220> <223> Description of Artificial Sequence: HMM38PS-r-hIL-7 cDNA <220> <221> CDS <222> (1)..(519) <400> 18 Met Trp Trp Arg Leu Trp Trp Leu Leu Leu Leu Leu Leu Leu Trp 10 15 1 5 96 ccc atg gtg tgg gcc gat tgt gat att gaa ggt aaa gat ggc aaa caa Pro Met Val Trp Ala Asp Cys Asp Ile Glu Gly Lys Asp Gly Lys Gln 20 25 144 tac gag tcc gtt ctg atg gtc agc atc gat caa tta ttg gac agc atg Tyr Glu Ser Val Leu Met Val Ser Ile Asp Gln Leu Leu Asp Ser Met 45 35 40 aaa gaa att ggt agc aat tgc ctg aat aat gaa ttt aac ttt ttt aaa 192 Lys Glu Ile Gly Ser Asn Cys Leu Asn Asn Glu Phe Asn Phe Phe Lys 60 55 50 aga cat atc tgt gat gct aat aag gaa ggt atg ttt tta ttc cgt gct Arg His Ile Cys Asp Ala Asn Lys Glu Gly Met Phe Leu Phe Arg Ala 70 75 65 get ege aag ttg agg caa ttt ett aaa atg aat age aet ggt gat ttt 288 Ala Arg Lys Leu Arg Gln Phe Leu Lys Met Asn Ser Thr Gly Asp Phe

90

gat ctc cac tta tta aaa gtt tca gaa ggc aca aca ata ctg ttg aac

12

85

Asp Leu His Leu Leu Lys Val Ser Glu Gly Thr Thr Ile Leu Leu Asn 100 105 tgc act ggc cag gtt aaa gga aga aaa cca gct gcc ctg ggt gaa gcc 384 Cys Thr Gly Gln Val Lys Gly Arg Lys Pro Ala Ala Leu Gly Glu Ala 125 115 120 caa cca aca aag agt ttg gaa gaa aat aaa tct tta aag gaa cag aaa 432 Gln Pro Thr Lys Ser Leu Glu Glu Asn Lys Ser Leu Lys Glu Gln Lys 135 140 aaa ctg aat gac ttg tgt ttc cta aag aga cta tta caa gag ata aaa 480 Lys Leu Asn Asp Leu Cys Phe Leu Lys Arg Leu Leu Gln Glu Ile Lys 150 155 145 act tgt tgg aat aaa att ttg atg ggc act aaa gaa cac 519 Thr Cys Trp Asn Lys Ile Leu Met Gly Thr Lys Glu His 165 170 <210> 19 <211> 173 <212> PRT <213> Artificial Sequence <223> Description of Artificial Sequence: HMM38PS-r-hIL-7 cDNA <400> 19 Met Trp Trp Arg Leu Trp Trp Leu Leu Leu Leu Leu Leu Leu Trp 10 Pro Met Val Trp Ala Asp Cys Asp Ile Glu Gly Lys Asp Gly Lys Gln 25 20 Tyr Glu Ser Val Leu Met Val Ser Ile Asp Gln Leu Leu Asp Ser Met 40 Lys Glu Ile Gly Ser Asn Cys Leu Asn Asn Glu Phe Asn Phe Phe Lys 55 Arg His Ile Cys Asp Ala Asn Lys Glu Gly Met Phe Leu Phe Arg Ala 75 70 Ala Arg Lys Leu Arg Gln Phe Leu Lys Met Asn Ser Thr Gly Asp Phe 85 90 Asp Leu His Leu Leu Lys Val Ser Glu Gly Thr Thr Ile Leu Leu Asn 110 100 105

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125

Cys Thr Gly Gln Val Lys Gly Arg Lys Pro Ala Ala Leu Gly Glu Ala 120

115

Gln Pro Thr Lys Ser Leu Glu Glu Asn Lys Ser Leu Lys Glu Gln Lys 130 135 140 Lys Leu Asn Asp Leu Cys Phe Leu Lys Arg Leu Leu Gln Glu Ile Lys 150 155 160 145 Thr Cys Trp Asn Lys Ile Leu Met Gly Thr Lys Glu His 165 170 <210> 20 <211> 537 <212> DNA <213> Artificial Sequence <220> <223> Description of Artificial Sequence: EPOPS-sIL-7 cDNA <220> <221> CDS <222> (1)..(537) <400> 20 atg ggg gtg cac gaa tgt cct gcc tgg ctg tgg ctt ctc ctg tcc ctg 48 Met Gly Val His Glu Cys Pro Ala Trp Leu Trp Leu Leu Ser Leu 1 5 10 15 ctg tcg ctc cct ctg ggc ctc cca gtc ctg ggc gat tgt gat att gaa 96 Leu Ser Leu Pro Leu Gly Leu Pro Val Leu Gly Asp Cys Asp Ile Glu ggt aaa gat ggc aaa caa tac gag tcc gtt ctg atg gtc agc atc gat 144 Gly Lys Asp Gly Lys Gln Tyr Glu Ser Val Leu Met Val Ser Ile Asp 45 35 40 caa tta ttg gac agc atg aaa gaa att ggt agc aat tgc ctg aat aat 192 Gln Leu Leu Asp Ser Met Lys Glu Ile Gly Ser Asn Cys Leu Asn Asn 50 55 gaa ttt aac ttt ttt aaa aga cat cta tgt gat gat aat aag gaa ggt 240 Glu Phe Asn Phe Phe Lys Arg His Leu Cys Asp Asn Lys Glu Gly 80 75 65

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aca a			_	_		_										384
gct g Ala A	-															432
tct t Ser I		_	_													480
cta d			_													528
aaa (-															537
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Gly	Lys	Asp 35		· Lys	Gln	Туг	Glu 40		Val	Leu	Met	Val		·Ile	Asp	
Gln	Leu 50		Asp	Ser	Met	Lys 55		Ile	Gly	Ser	Asn		Leu	ı Asn	a Asn	

Glu Phe Asn Phe Phe Lys Arg His Leu Cys Asp Asp Asn Lys Glu Gly
65 70 75 80

Met Phe Leu Phe Arg Ala Ala Arg Lys Leu Arg Gln Phe Leu Lys Met 85 90 95

Asn Ser Thr Gly Asp Phe Asp Leu His Leu Leu Lys Val Ser Glu Gly 100 105 110

Thr Thr Ile Leu Leu Asn Cys Thr Gly Lys Val Lys Gly Arg Lys Pro 115 120 125

Ala Ala Leu Gly Glu Pro Gln Pro Thr Lys Ser Leu Glu Glu Asn Lys 130 135 140

Ser Leu Lys Glu Gln Lys Lys Leu Asn Asp Ser Cys Phe Leu Lys Arg 145 150 155 160

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Lys Glu His

<210> 22

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<223> Description of Artificial Sequence: HMM38PS-sIL-7
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<222> (1)..(519)

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20 25 30

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-	-	-	_											Asp		
				85				-1-	90				1	95		
				-												
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Cys	Thr	Gly	Lys	Val	Lys	Gly	Arg	Lys	Pro	Ala	Ala	Leu	Gly	Glu	Pro	
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			·													
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Gln		Thr	Lys	Ser	Leu		Glu	Asn	Lys	Ser	_	Lys	Glu	Gln	Lys	
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	_		_		-			_	_				-	ata		480
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<213> Artificial Sequence

<223> Description of Artificial Sequence: HMM38PS-sIL-7 cDNA

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Lys	Glu 50	Ile	Gly	Ser	Asn	Cys 55	Leu	Asn	Asn	Glu	Phe 60	Asn	Phe	Phe	Lys
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Ala	Arg	Lys	Leu	Arg 85	Gln	Phe	Leu	Lys	Met 90	Asn	Ser	Thr	Gly	Asp 95	Phe
Asp	Leu	His	Leu 100	Leu	Lys	Val	Ser	Glu 105	Gly	Thr	Thr	Ile	Leu 110	Leu	Asn
Суз	Thr	Gly 115	Lys	Val	Lys	Gly	Arg 120	Lys	Pro	Ala	Ala	Leu 125	Gly	Glu	Pro
Gln	Pro 130	Thr	Lys	Ser	Leu	Glu 135	Glu	Asn	Lys	Ser	Leu 140	Lys	Glu	Gln	Lys
Lys 145	Leu	Asn	Asp	Ser	Cys 150	Phe	Leu	Lys	Arg	Leu 155	Leu	Gln	Lys	Ile	Lys 160
Thr	Cys	Trp	Asn	Lys 165	Ile	Leu	Met	Gly	Thr 170	Lys	Glu	His			